

JTEG Technology Needs

Calendar Year 2001

The following technology areas were identified as needed by the depot maintenance community during Calendar Year 2001. The JDMAG JTEG staff grouped these identified technology areas into the 13 technology categories in which the technology projects are also grouped. The technology needs were matched with the JTEG Projects, as noted with project numbers within parentheses. The technology needs were also matched with known information other than JTEG Projects, as noted with an asterisk). The military service that submitted the technology need is indicated within the brackets at the end of the technology heading. At a future date, this document will be revised to include additional hyperlinks and communication numbers for the provided technology resources. For further information concerning this document or the any of the technology needs and resources, please contact Mr. Carl Adams, 937-656-2771 (DSN 986), email carl.adams@wpafb.af.mil

1) **Best Business Practices** –

- **Information Management** - Simple “Point, Click, and Ship” Real-Time Information Management system; Failure Prediction System for Aircraft, Engines, and Subsystems; Prediction System for Supply Chain Management; Information Technology (IT); Centralized Policies/Procedures; Reverse Engineering of Obsolete Components; Commercial Off The Shelf (COTS) Equipment Obsolescence - [AF]
 - Interactive Maintenance Aiding System (IMAS) (#288)
 - Industrial Plant Equipment (IPE) Maintenance Advisor (#37907)
 - Engineering Data Management Information and Control System -EDMICS (#328)
 - *Maintenance Mentoring System - (NCMS/CTMA & Intelliworxx)
 - *Next Generation Inspection System (NCMS/CTMA)
 - *Advanced Integrated Maintenance Support System (AIMSS) - Raytheon
 - *Advanced Speciality Engineering Networked Toolkit (ASENT) - Raytheon
 - *Generalized Automated Maintenance Environment (GAME) - Raytheon,
 - *University of Limerick R&D Reengineering Project
 - *Boeing Legacy ATE (Jim Orlet)

2) **Cleaning and Stripping** –

- **Laser Shot Peen (LSP)** - [AF]
 - *Laser Shot Peen Project, (NCMS/CTMA)
- **New Depaint Technology for Composites/Low Observables (LO)** - [AF]
 - Armex Cleaning and Coating Removal, 800-332-5424
 - The Southwest Research Institute, 210-522-2257
- **Laser Paint Stripping** – Low powered focused laser beam to vaporize the paint coating from a substrate - [USMC]
 - Laser Automated Depainting System (LADS) (#37874)
 - Lasers for Paint Removal Phase I (#48)
 - Laser Technology (#41411)
 - *Joint Paint Removal Study- Laser (JTEG Oct 96)
 - *JASSPA Project on Portable Laser Coating Removal System
 - *AFRL Project on Portable Diode Laser Coatings Removal

3) Composites -

- Advanced Composite In-service NDE System (#32)
- Composite Repair Center (Advanced Composite Repair Center) (#221)
- Composite Repair Facility (#281)
- Composite Structures Repair Study (Phase I) (#37)
- Composite Structures Repair Study (Phase II) (#38)
- *Improved Performance of Honeycomb Bonded Structures Project (NCMS/CTMA)
- *National Composite Center (Dayton, OH)
- *The Nordam Group Repair Division (in Tulsa, OK)
- *Kaman Aerospace (in Hartford, CT)
- *Lunn Industries (in Glen Cove, NY)
- *Composites Unlimited (in South Irvine, CA)
- *TEKLAM Corporation (in Corona, CA)
- *Pacific Panels (in Oakland, CA)

4) Corrosion Control -

- Corrosion Source
- Corrosion Management Expert System (#270)
- Laboratory Precision Immersion Ultrasonic Inspection System (#229)
- Resonant Ultrasound Second Harmonic Inspection - RUSHI (#48532)
- Robotic Non-Destructive Inspection, X-Ray and N-Ray System (#239)
- Single-Step Magnetic Particle Inspection (#263)
- Ultrasonic C-Scan Inspection System (#302)
- Corrosion Management Expert System (#270)
- *IBIS - Instrument for Biomolecular Interaction Sensing; (Windsor Scientific Limited)
- *JASSPA Project on Non-Chromate Aluminum Pretreatments
- *JASSPA Project on Chromium Free Primers for Inserts and Fasteners
- *JASSPA Project on Chromate Free Conversion Coating
- *JASSPA Project on Chromate Free Primer and Sealants
- **Enhanced Digital Corrosion Detection System** - Develop a device to detect and quantify corrosion for aircraft use - [AF]
 - *Instrument for Biomolecular Interaction Sensing - IBIS (Windsor Scientific Limited)

5) Electronics -

- **Extendable Communications Integrated Support Environment (ECOMISE) Rehost** - Core Unit which is based on an old DEC VAX & VAX operating system, needs to be rehosted to a PC based system running Windows NT or 2000 - [AF]
 - None
- **Joint Tactical Information Distribution System (JTIDS) and Multi-functional Information Distribution System (MIDS) Operational Flight Programs (OFPs) Update** -Developed in FORTRAN and now need to be re-written in an object oriented HOL such as C++ [AF]
 - None

6) Environmental/Hazmat -

- **Environmental** - Bio-Degradable Aircraft De-Icing Fluid [AF]
 - *NASA Ames Research Center Aerospace Anti-Icing Project

- *North East Deicing Symposium; POC Bob Stone Buffalo Airport
- **Halon Replacement** - Used in fire suppression systems, halon is being phased due to restrictions from the EPA - [\[USMC\]](#)
 - *USN CFC Clearing House
 - *3M Corporation
 - *Halon Replacement Project (National Center for Environmental Research)
 - *AFRL Halon Replacement Team
 - *TRIODIDE (CF3I) - Second Generation Halon (New House International)
 - *FM-200 & FE-241 (Nautical Fire Suppression Ltd)
- **Welding Fume Emissions** - Reduce the allowable emissions of welding fumes - [\[USMC\]](#)
 - Laser Repair Center (#236)
 - *Navy Joining Center
 - *Edison Welding Institute
- **Lead (Pb) Free Soldering** - Alternatives to lead based solders - [\[USMC\]](#)
 - *Faraday Technology Company -Lead Free Soldering Project
 - *JASSPA Project on Lead Free Solder
- **Cadmium Alternatives** - New technologies to replace cadmium coatings for the purposes of corrosion control, hydrogen embrittlement, and fatigue reduction - [\[USMC\]](#)
 - Cadmium Plating Bath Substitution (#41374)
 - Replacement of Cadmium Plating with Zinc Plating (#8987)
 - Zinc Alloy Plating (#56350)
 - *JASSPA Joint Cadmium Alternatives Team
 - *JASSPA Project on Alternatives to Electrodeposited Cadmium
- **Air Recirculation in Aircraft Paint Hangars and Larger Paint Facilities** - Development of sensors and controls to measure the amount of VOCs and allow recirculation of the conditioned air in the return air stream - [\[AF\]](#)
 - Air Force Paint Spray Booth Flow Reduction (#55718)
 - Corona Destruction Process (#55720)
 - UV Oxidation to Breakdown VOCs (#56349)
 - *EPA Research Triangle Park, (POC Chuck Darwin)
 - *International Truck and Engine Company
 - *Regenerable Catalytic Filter System Project (National Center for Environmental Research)
- **Acoustic Emissions Assessment of Machinery Condition** - Evaluate a hand-held Condition Monitoring system for Rotating Machinery that provides a real time indication of the state of health - [\[NAVSEA\]](#)
 - *Acoustic Emissions Monitoring (Sonix, Inc)
 - *Sales Technology, Inc.
 - *MachineryWatch.com
- **Improved Defuel/Depuddle Process** - [\[AF\]](#)
 - Fuel Blending (#8990)

7) Improved Maintenance Practices -

- **Telemaintenance** - Allow depot level technicians to assist field personnel in the troubleshooting of electronic components - [\[USMC\]](#)
 - Interactive Maintenance Aiding System - IMAS (#288)

- Industrial Plant Equipment (IPE) Maintenance Advisor (#37907)
- *Maintenance Mentoring System (NCMS/CTMA & Intelliworxx)
- *Advanced Integrated Maintenance Support System (AIMSS) - Raytheon
- *Advanced Speciality Engineering Networked Toolkit (ASENT) - Raytheon
- *Generalized Automated Maintenance Environment (GAME) - Raytheon

8) Laser Applications -

- **Laser Paint Stripping** - Low powered focused laser beam to vaporize the paint coating from a substrate - [USMC]
 - Laser Automated Depainting System (LADS) (#37874)
 - Lasers for Paint Removal Phase I (#48)
 - Laser Technology (#41411)
 - *Joint Paint Removal Study- Laser (JTEG Oct 96)
 - *JASSPA Project on Portable Laser Coating Removal System
 - *AFRL Project on Portable Diode Laser Coatings Removal
- **Laser Engineered Net Shaping** - Fabricate three-dimensional metallic components directly from CAD drawings or from solid models - [USMC]
 - Rapid Prototype Manufacturing - RPM #(010701)
 - Laser Machining Center (#359)
 - Laser Cutting Machine CNC (#354)
 - *NCMS/CTMA

9) Machining, Metalworking, and Fabrication -

- **Laser Engineered Net Shaping** - Fabricate three-dimensional metallic components directly from CAD drawings or from solid models - [USMC]
 - Rapid Prototype Manufacturing - RPM #(010701)
 - Laser Machining Center (#359)
 - Laser Cutting Machine CNC (#354)
 - *NCMS/CTMA
- **Structures - Corrosion & Fatigue Cracking** - Detect Cracks in Fretted Surfaces - [AF]
 - Automated Fluorescent Penetrant Inspection System (#298)
 - Disk Surface Eddy Current Inspection System (#31)
 - Improved Inspection for Hole Cracking (#260)
 - Integrated Blade Inspection System (IBIS) (#35)
 - Laboratory Precision Immersion Ultrasonic Inspection System (#229)
 - Resonant Ultrasound Second Harmonic Inspection - RUSHI (#48532)
 - Robotic Non-Destructive Inspection, X-Ray and N-Ray System (#239)
 - Single-Step Magnetic Particle Inspection (#263)
 - Ultrasonic C-Scan Inspection System (#302)
 - Ultrasonic Evaluation of Bonded Structure Repair (#284)
 - Corrosion Management Expert System (#270)
 - *IBIS - Instrument for Biomolecular Interaction Sensing; (Windsor Scientific Limited)
- **C-5 Honeycomb Floor Panels** - These panels be redesigned from face sheet materials that are very impact resistant - [AF]
 - Robotic Van Panel Assembly (#9164)
 - Advanced Composite In-service NDE System (#32)
 - Composite Repair Center (Advanced Composite Repair Center) (#221)

- Composite Repair Facility (#281)
- Composite Structures Repair Study (Phase I) (#37)
- Composite Structures Repair Study (Phase II) (#38)
- *Improved Performance of Honeycomb Bonded Structures Project (NCMS/CTMA)
- *National Composite Center (Dayton, OH)
- *The Nordam Group Repair Division (in Tulsa, OK)
- *Kaman Aerospace (in Hartford, CT)
- *Lunn Industries (in Glen Cove, NY)
- *Composites Unlimited (in South Irvine, CA)
- *TEKLAM Corporation (in Corona, CA)
- *Pacific Panels (in Oakland, CA)
- **Intelligent Near Net-shape Manufacturing Cell** - Develop to produce detail machined aircraft structural members directly from digital engineering data to provide improved mission effectiveness and manufacturing supportability - [\[AF\]](#)
 - Rapid Prototype Manufacturing (RPM) #(010701)
 - Laser Machining Center (#359)
 - Laser Cutting Machine CNC (#354)
- **Oxy-Fuel Cutting Alternatives** - Development of portable Plasma Arc Cutting equipment capable of cutting greater than 1 inch thick plate - [\[NAVSEA\]](#)
 - *Petrogen Oxy-Gasoline Cutting System (Petrogen, Inc)
 - *Steel America Fabrication and Repair
 - *Cadet Portable Oxy-Fuel Cutter (Weld Plus Inc)
 - *Cebora Plasma Cutter (Hember Plant Hire, Ltd)

10) Plating -

- **Cadmium Alternatives** - New technologies to replace cadmium coatings for the purposes of corrosion control, hydrogen embrittlement, and fatigue reduction - [\[USMC\]](#)
 - Cadmium Plating Bath Substitution (#41374)
 - Replacement of Cadmium Plating with Zinc Plating (#8987)
 - Zinc Alloy Plating (#56350)
 - *JASSPA Joint Cadmium Alternatives Team
 - *JASPPA Project on Alternatives to Electrodeposited Cadmium

11) Quality and Inspection Processes -

- **Aging Aircraft Requirements / Aging Wiring Inspections** - Better NDE methods that detect defects through multiple layers; Improved structural integrity analysis tools; Wiring fault isolation, diagnostics, and repair processes; Environmentally friendly cleaning, de-painting, and painting materials and processes. Rapid Near Net Shape Manufacturing; Forging Replacement; Advanced NDI; Environmental compliance - [\[AF\]](#)
 - *Project on Aging Aircraft Wiring (NCMS/CTMA)
 - *Project on Wiring System Integrity (NCMS/CTMA)
 - *The Sustainment Readiness Working Group (WPAFB)
 - *Project on Methods to Detect Wiring Problems (AFRL)
- **FOD Identification and Collection Process** [\[AF\]](#)
 - The Shields Company

12) Surface Finishing -

- **Concrete Sealant & IR the Runway** - [AF]
 - *J&R Industries (Los Angeles, CA)
 - *Endur-O-Seal USA (Pinehurst, TX)
 - *Endro-O-Crete (Greenbank, WA)
 - *Dur-A-Shield of Ohio
- **Testing Capability to Verify/Validate Low Observable (LO) Topcoat; Reduced Cure Time of Primers and Topcoats; Non-Chromated Primer** - [AF]
 - *IBIS - Instrument for Biomolecular Interaction Sensing; (Windsor Scientific Limited)
 - *JASSPA Project on Non-Chromate Aluminum Pretreatments
 - *JASSPA Project on Chromium Free Primers for Inserts and Fasteners
 - *JASSPA Project on Chromate Free Conversion Coating
 - *JASSPA Project on Chromate Free Primer and Sealants

13) Test and Evaluation -

- *Advanced Testing Technologies
- **Non-Destructive Testing Equipment** - Needed to identify welding deficiencies and cracks in substrates - [USMC]
 - Automated Fluorescent Penetrant Inspection System (#298)
 - Disk Surface Eddy Current Inspection System (#31)
 - Improved Inspection for Hole Cracking (#260)
 - Integrated Blade Inspection System - IBIS (#35)
 - Laboratory Precision Immersion Ultrasonic Inspection System (#229)
 - Resonant Ultrasound Second Harmonic Inspection - RUSHI (#48532)
 - Robotic Non-Destructive Inspection, X-Ray and N-Ray System (#239)
 - Single-Step Magnetic Particle Inspection (#263)
 - Ultrasonic C-Scan Inspection System (#302)
 - Ultrasonic Evaluation of Bonded Structure Repair (#284)
- **Portable Miniaturized Residual Stress Measurement System** - To allow field measurement of residual stress states of structures while installed - [AF]
 - Resonant Ultrasound Second Harmonic Inspection -RUSHI (#48532)
 - Ultrasonic C-Scan Inspection System (\$302)
 - Automated Fluorescent Penetrant Inspection System (#298)
 - Disk Surface Eddy Current Inspection System (#31)
 - Improved Inspection for Hole Cracking (#260)
 - Integrated Blade Inspection System - IBIS (#35)
 - Single-Step Magnetic Particle Inspection (#263)
- **Test Program Set (TPS) for B-1B Flight Control Line Replaceable Units (LRUs) Chassis; Weapon System Avionics Component Tester (B-1)** - [AF]
 - Modular Automatic Test Equipment Software Support/Development System (#204)
 - Artificial Neural Test Station - ANTS (#37866)
 - Automatic Test Equipment Software Support Environment (#206)
 - In-Circuit Testing of N-16 Modules (#9096)
 - *Boeing Aerospace Legacy ATE (Jim Orlet)
 - *Generalized Automated Maintenance Environment (GAME) - Raytheon,